

## CRUISE REPORT

#89014

1. Ship name (mother ship)/submersibles: RV Akademik Mstislav Keldysh  
DSV MIR-1, DSV MIR-2

2. Cruise number and leg: cruise 19, leg 1

3. Project name: US-USSR cooperative research  
Mid-Atlantic Ridge Crest Processes Project

4. Funding Agency: U.S. Geological Survey  
USSR Academy of Sciences

5. Funding amount: U.S. \$ 10,000.  
USSR ? 24 days ship time

6. Contract number: none

7. Contract start/end dates: none

8. Area of operations: North Atlantic - Kings Trough - 43N, 20W

9. Departure date and port: June 12, 1989 - Kiel, West Germany

10. Return date and port: July 5, 1989 - Washington DC

11. Names and affiliations - scientific party:

a. Dr. Vyacheslav S. Yastrebov - Chief Scientist

P.P. Shirshov Institute of Oceanology, Moscow USSR

b. Dr. Kim D. Klitgord - U.S. co-chief scientist - MIR science dive team  
U.S. Geological Survey, Woods Hole MA USA

c. Dr. Nikolai L. Dobretsov - MIR science dive team

Institute of Geology and Geophysics, Novosibirsk, Siberia USSR

d. Dr. Mikhail I. Kuzmin - MIR science dive team

Institute of Geochemistry - Irkutsk, Siberia USSR

e. Dr. Nikita A. Bogdanov - Secretary General of IGC

Institute of the Lithosphere, Moscow USSR

f. Dr. John F. Casey - petrologist - MIR science dive team

University of Houston, Houston TX USA

g. Dr. Igor M. Sborshshikov - co-chief scientist - MIR science dive team

P.P. Shirshov Institute of Oceanology, Moscow USSR

h. Dr. Anatoly Sagalevitch - chief MIR pilot and head of operations

P.P. Shirshov Institute of Oceanology, Moscow USSR

i. Dr. Alexander P. Lisitzin - science team

P.P. Shirshov Institute of Oceanology, Moscow USSR

j. Dr. Lev P. Zonenshain - science team

P.P. Shirshov Institute of Oceanology, Moscow USSR

k. Dr. Lev Natapov - science team

Ministry of Geology, Moscow USSR

l. Dr. Susan M. Agar - science team

University of Leeds, Leeds UK

m. Dr. Sergei Silantiev - metamorphic petrologist

Vernadsky Institute of Geochemistry, Moscow, USSR

12. Cruise objective: see foreign trip report for more details

1. MIR submersible diving program in east end of Kings Trough  
rock sampling and photographic study of the scarps that  
form the north and south walls of Freen Deep and the  
north wall of Peake Deep.

13. Scientific equipment and navigation:

- a. Magnovox satellite positioning system
- b. Klein side-scan sonar system
- c. towed camera system for near bottom still photo and video surveys
- d. bottom transponder navigation system for MIR submersibles
- e. 2 6000m depth capability MIR submersibles

14. Tabulated information:

- a. Days at sea: 24
- b. Types of continuous data (in km): none
- c. Stations occupied:
  - 1. rock dredge stations - none
  - 2. sediment core stations - 2
    - a. both in Freen Deep
  - 3. camera stations - 1
    - a. crest of Palmer Ridge depth - 3000m
  - 4. sidescan sonar station - 1
    - a. crest of Palmer Ridge depth - 3000m
  - 5. Hydro stations - 1
    - Freen Deep
  - 5. MIR submersible dives - 7
    - a. MIR-1 Keldysh 19-2096
      - north wall of Freen Deep - scarp of Palmer Ridge
      - observer - Prof. N. Dobretzov
    - b. MIR-2 Keldysh 19-2098
      - south wall of Freen Deep
      - observer - Dr. Jack Casey, Univ. Houston
      - 19 rock samples
    - c. MIR-1 Keldysh 19-2103
      - north wall of Freen Deep - scarp of Palmer Ridge
      - observers - National Geographic joint dive
      - 3 rock samples
    - d. MIR-2 Keldysh 19-2103
      - north wall of Freen Deep - scarp of Palmer Ridge
      - observers - National Geographic joint dive
    - e. MIR-1 Keldysh 19-2106
      - north wall of Peake Deep
      - observer - Dr. Igor Sborshshikov
      - 3 rock samples
    - f. MIR-1 Keldysh 19-2108
      - north wall of Freen Deep - scarp of Palmer Ridge
      - observer - Dr. Kim D. Klitgord, U.S. Geological Survey
      - 4 rock samples
    - g. MIR-2 Keldysh 19-2110
      - north wall of Freen Deep - scarp of Palmer Ridge
      - observer - Dr. Mikhail Kuzmin, Institute for Geochemistry Irkustk, USSR
      - 21 rock samples

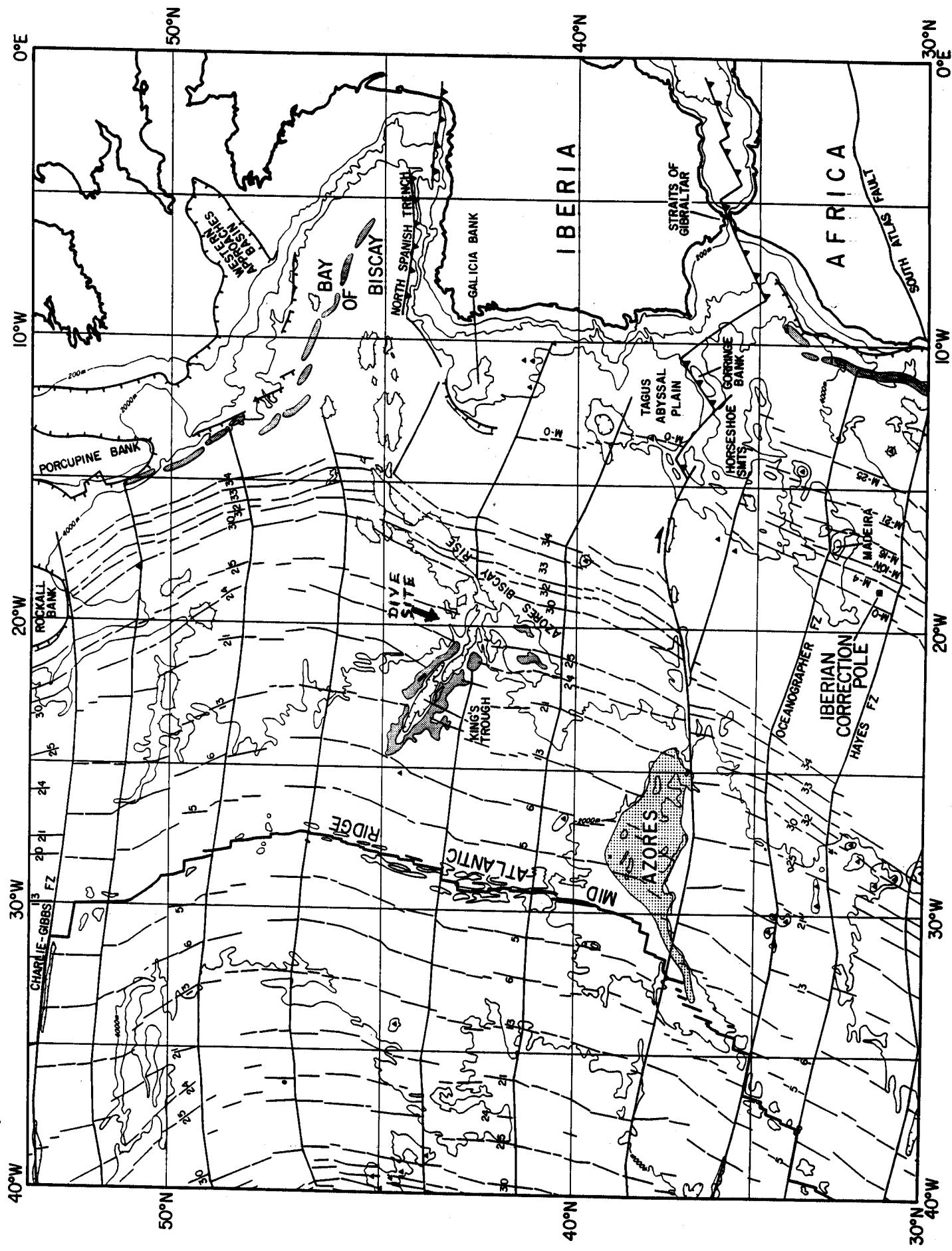


Figure 1

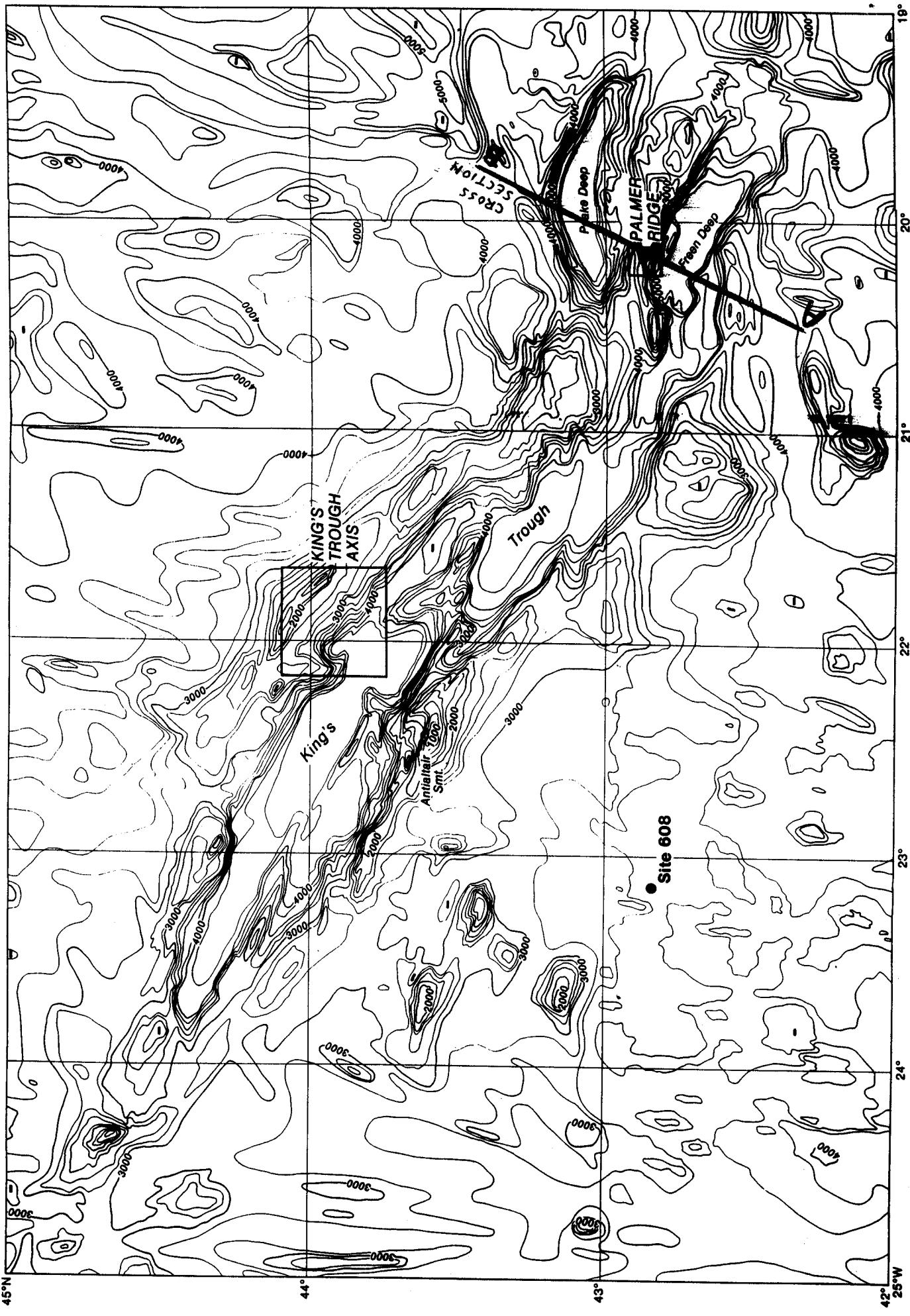


Figure 2

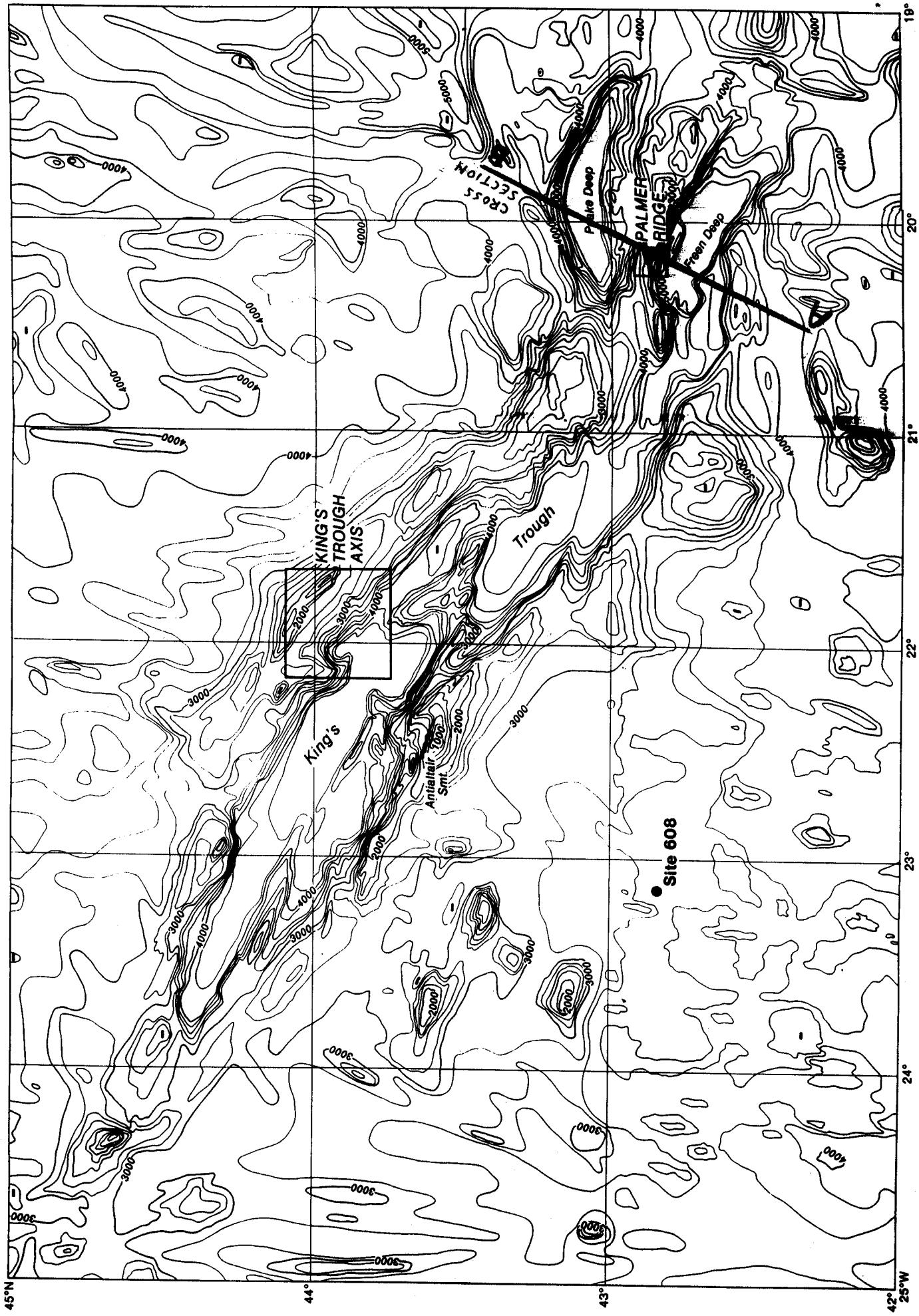


Figure 2

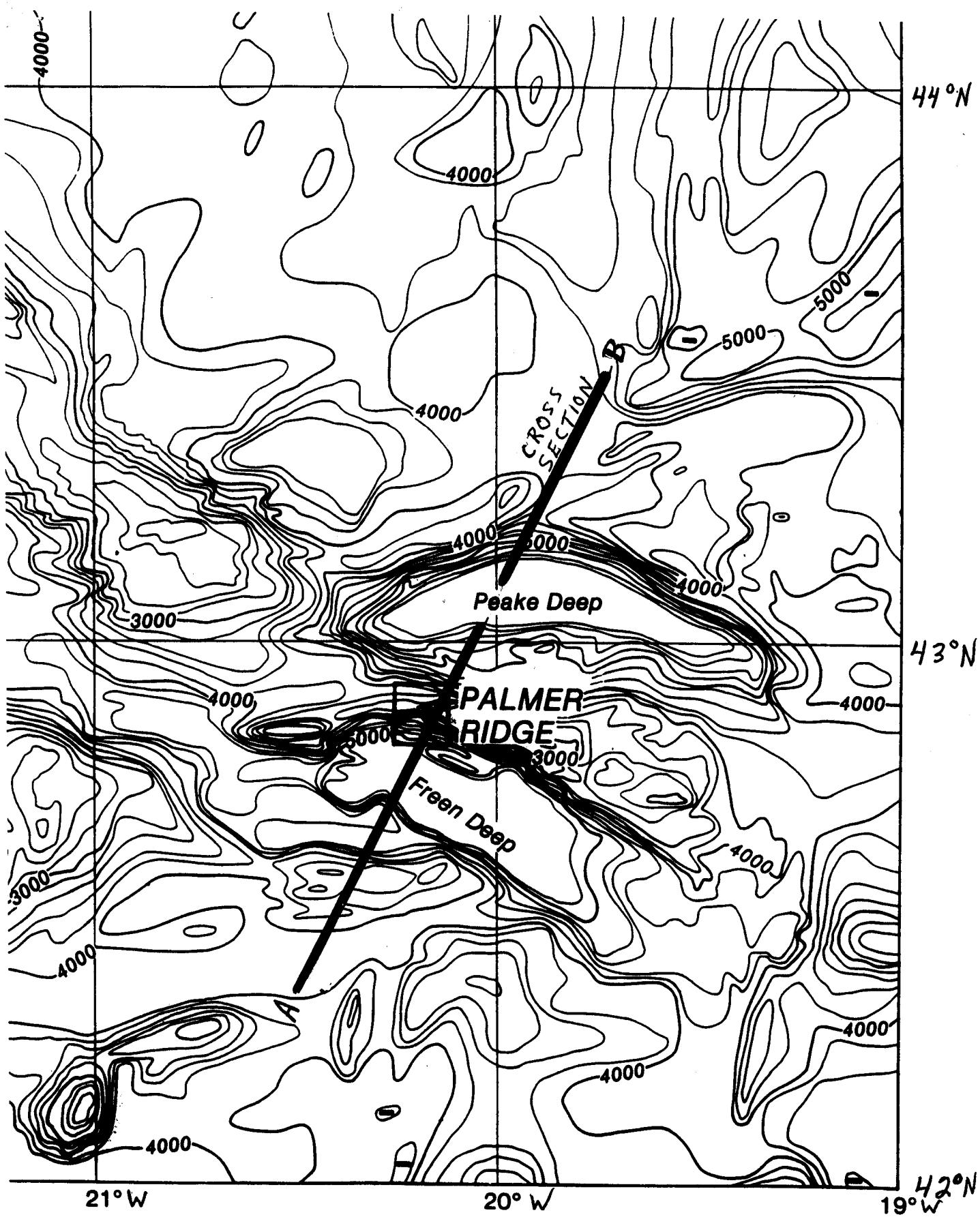


Figure 3

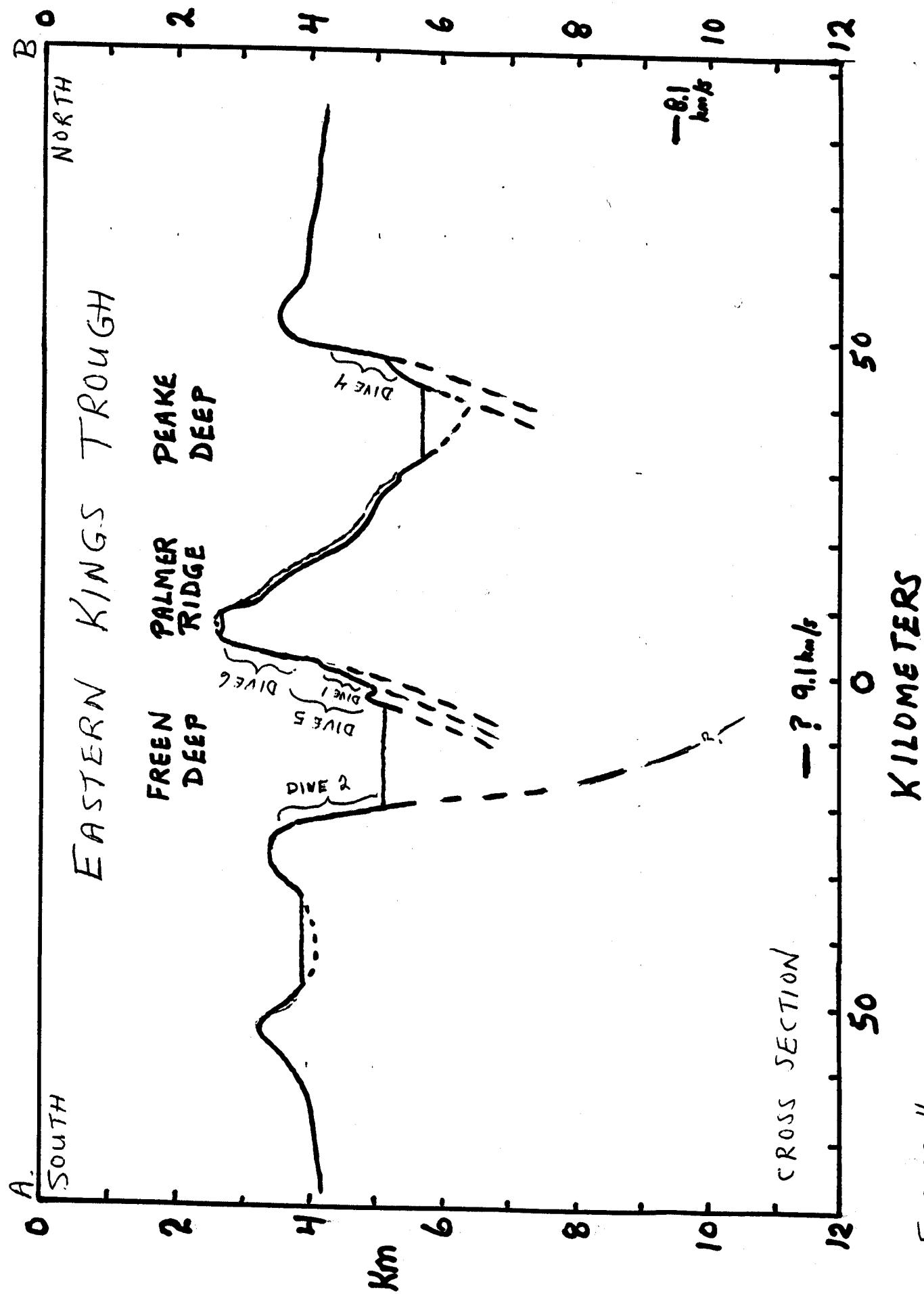


FIGURE 4

# NORTH WALL FREEN DEEP

